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(FILE 'HOME' ENTERED AT 09:25:07 ON 04 MAR 2003)

FILE 'MEDLINE, CAPLUS, BIOSIS, AGRICOLA' ENTERED AT 09:25:11 ON 04 MAR 2003

L1	2114	S XIA
L2	31	S L1 AND DEHYDROGENASE
L3	0	S L2 AND RESINOL
L4	0	S L2 AND ?RESINOL?
L5	16	DUP REM L2 (15 DUPLICATES REMOVED)
L6	0	S L4 AND SECOISOLARICIRESINOL
L7	13	S DEHYDROGENASE AND SECOISOLARICIRESINOL
L8	6	DUP REM L7 (7 DUPLICATES REMOVED)

L2 ANSWER 1 OF 6 MEDLINE DUPLICATE 1
AN 2003043178 IN-PROCESS
DN 22440245 PubMed ID: 12552151
TI CvADH1, a Member of Short-Chain Alcohol Dehydrogenase Family, is Inducible by Gibberellin and Sucrose in Developing Watermelon Seeds.
AU Kim Joonyul; Kang Hong-Gyu; Jun Sung-Hoon; Lee Jinwon; Yim Jieun; An Gynheung
CS National Research Laboratory of Plant Functional Genomics, Division of Molecular and Life Sciences, Pohang University of Science and Technology (POSTECH), Pohang, 790-784 Korea.
SO PLANT AND CELL PHYSIOLOGY, (2003 Jan) 44 (1) 85-92.
Journal code: 9430925. ISSN: 0032-0781.
CY Japan
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS IN-PROCESS; NONINDEXED; Priority Journals
ED Entered STN: 20030129
Last Updated on STN: 20030129
AB To understand the molecular mechanisms that control seed formation, we selected a seed-preferential gene (CvADH1) from the ESTs of developing watermelon seeds. RNA blot analysis and in situ localization showed that CvADH1 was preferentially expressed in the nucellar tissue. The CvADH1 protein shared about 50% homology with short-chain alcohol dehydrogenase including ABA2 in Arabidopsis thaliana, stem **secoisolariciresinol dehydrogenase** in Forsythia intermedia, and 3beta-hydroxysterol dehydrogenase in Digitalis lanata. We investigated gene-expression levels in seeds from both normally pollinated fruits and those made parthenocarpic via N-(2-chloro-4-pyridyl)-N'-phenylurea treatment, the latter of which lack zygotic tissues. Whereas the transcripts of CvADH1 rapidly started to accumulate from about the pre-heart stage in normal seeds, they were not detectable in the parthenocarpic seeds. Treating the parthenogenic fruit with GA(3) strongly induced gene expression, up to the level accumulated in pollinated seeds. These results suggest that the CvADH1 gene is induced in maternal tissues by signals made in the zygotic tissues, and that gibberellin might be one of those signals. We also observed that CvADH1 expression was induced by sucrose in the parthenocarpic seeds. Therefore, we propose that the CvADH1 gene is inducible by gibberellin, and that sucrose plays an important role in the maternal tissues of watermelon during early seed development.

L2 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2003 ACS
AN 2002:185144 CAPLUS
DN 136:229600
TI Increasing the guaiacyl lignan content of seed of monocotyledonous plants by engineering phenylpropanoid metabolism
IN Lewis, Norman G.; Davin, Laurence B.; Huang, Ning
PA Washington State University Research Foundation, USA; Applied Phytologics, Inc.
SO PCT Int. Appl., 136 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002020548	A1	20020314	WO 2001-US27500	20010904

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,

DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2001088741 A5 20020322 AU 2001-88741 20010904

PRAI US 2000-230632P P 20000907

WO 2001-US27500 W 20010904

AB The present invention provides methods for modifying lignan content in plants by introduction of genes for proteins and enzymes of the phenylpropanoid pathway leading to G-lignan formation. Such coding sequences are expressed under the control of a seed tissue specific or seed developmental stage specific promoter. Expression of the gene results in a modification of the level of an intermediate metabolite leading to the prodn. of G-lignans such as secoisolariciresinol diglucoside or matairesinol. Rice was transformed with endosperm- or aleurone-specific constructs for dirigent proteins, pinoresinol reductase, laccase, and **secoisolariciresinol dehydrogenase**. Transgenicplants showed an up to 17-18-fold increase in matairesinol seed content. Control seed had an av. matairesinol content of 1.13.+-.0.78 ng/100 mg. The most productive transgenic seed contained 19.8.+-.8.33 ng matairesinol/100 mg seed.

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 6 MEDLINE DUPLICATE 2

AN 2001308571 MEDLINE

DN 21201084 PubMed ID: 11278426

TI **Secoisolariciresinol dehydrogenase** purification, cloning, and functional expression. Implications for human health protection.

AU Xia Z Q; Costa M A; Pelissier H C; Davin L B; Lewis N G

CS Institute of Biological Chemistry, Washington State University, Pullman, Washington 99164-6340, USA.

SO JOURNAL OF BIOLOGICAL CHEMISTRY, (2001 Apr 20) 276 (16) 12614-23. Journal code: 2985121R. ISSN: 0021-9258.

CY United States

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals; Space Life Sciences

OS GENBANK-AF352734; GENBANK-AF352735

EM 200105

ED Entered STN: 20010604
Last Updated on STN: 20030105
Entered Medline: 20010531

AB Matairesinol is a central precursor in planta in the biosynthesis of numerous lignans, including that of the important antiviral and anticancer agent, podophyllotoxin. In this study, the approximately 32-kDa NAD-dependent **secoisolariciresinol dehydrogenase**, which catalyzes the enantiospecific conversion of (-)-secoisolariciresinol into (-)-matairesinol in Forsythia intermedia, was purified >6,000-fold to apparent homogeneity. The 831-base pair cDNA clone encoding this 277-amino acid protein was next obtained from a library constructed from F. intermedia stem tissue, whose fully functional recombinant protein, produced by expression of this cDNA in Escherichia coli, catalyzed the same enantiospecific conversion via the corresponding lactol intermediate. A homologous **secoisolariciresinol dehydrogenase** gene was also isolated from a Podophyllum peltatum rhizome cDNA library, whose 834-base pair cDNA clone encoded a 278-amino acid protein with a calculated molecular mass of approximately 32 kDa. Expression of this protein in E. coli produced a fully functional recombinant protein that also catalyzed the enantiospecific conversion of (-)-secoisolariciresinol into (-)-matairesinol via the intermediary lactol. Various kinetic parameters were defined and established conversion of the intermediary lactol as being rate-limiting. With this overall enzymatic conversion now unambiguously defined, the entire biochemical pathway to the lignans, secoisolariciresinol and matairesinol, has been elucidated. Last, both

secoisolariciresinol and matairesinol are metabolized in the gut of mammals, following digestion of high fiber dietary grains, seeds, and berries, into the so-called "mammalian" lignans, enterodiol and enterolactone, respectively; these in turn confer significant protection against the onset of breast and prostate cancers.

L2 ANSWER 4 OF 6 MEDLINE DUPLICATE 3
AN 2001129080 MEDLINE
DN 21016670 PubMed ID: 11130663
TI Dirigent-mediated podophyllotoxin biosynthesis in Linum flavum and Podophyllum peltatum.
AU Xia Z Q; Costa M A; Proctor J; Davin L B; Lewis N G
CS Institute of Biological Chemistry, Washington State University, Pullman 99164-6340, USA.
SO PHYTOCHEMISTRY, (2000 Nov) 55 (6) 537-49.
Journal code: 0151434. ISSN: 0031-9422.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Space Life Sciences
EM 200103
ED Entered STN: 20010404
Last Updated on STN: 20020528
Entered Medline: 20010301
AB Given the importance of the antitumor/antiviral lignans, podophyllotoxin and 5-methoxypodophyllotoxin, as biotechnological targets, their biosynthetic pathways were investigated in Podophyllum peltatum and Linum flavum. Entry into their pathways was established to occur via dirigent mediated coupling of E-coniferyl alcohol to afford (+)-pinoresinol; the encoding gene was cloned and the recombinant protein subsequently obtained. Radiolabeled substrate studies using partially purified enzyme preparations next revealed (+)-pinoresinol was enantiospecifically converted sequentially into (+)-lariciresinol and (-)-secoisolariciresinol via the action of an NADPH-dependent bifunctional pinoresinol/lariciresinol reductase. The resulting (-)-secoisolariciresinol was enantiospecifically dehydrogenated into (-)-matairesinol, as evidenced through the conversion of both radio- and stable isotopically labeled secoisolariciresinol into matairesinol, this being catalyzed by the NAD-dependent **secoisolariciresinol dehydrogenase**. (-)-Matairesinol was further hydroxylated to afford 7'-hydroxymatairesinol, this being efficiently metabolized into 5-methoxypodophyllotoxin. Thus much of the overall biosynthetic pathway to podophyllotoxin has been established, that is, from the dirigent mediated coupling of E-coniferyl alcohol to the subsequent conversions leading to 7'-hydroxymatairesinol.

L2 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2003 ACS
AN 1999:708888 CAPLUS
DN 131:333037
TI Forsythia **secoisolariciresinol dehydrogenase** and cDNA and modulation of lignan biosynthesis in plants
IN Xia, Zhi-quiang; Costa, Michael A.; Davin, Laurence B.; Lewis, Norman G.
PA Washington State University Research Foundation, USA
SO PCT Int. Appl., 66 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9955846	A1	19991104	WO 1999-US8975	19990423

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,

MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

CA 2326380	AA	19991104	CA 1999-2326380	19990423	
AU 9937606	A1	19991116	AU 1999-37606	19990423	
EP 1071754	A1	20010131	EP 1999-920016	19990423	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI					
BR 9909879	A	20011120	BR 1999-9879	19990423	
JP 2002512790	T2	20020508	JP 2000-545990	19990423	
PRAI US 1998-82977P	P	19980424			
WO 1999-US8975	W	19990423			

AB A **secoisolariciresinol dehydrogenase** protein has been isolated from Forsythia intermedia, together with cDNAs encoding **secoisolariciresinol dehydrogenase** from this species. Accordingly, isolated DNA sequences are provided which code for the expression of **secoisolariciresinol dehydrogenase**. In other aspects, the present invention is directed to replicable recombinant cloning vehicles comprising a nucleic acid sequence which codes for a **secoisolariciresinol dehydrogenase** protein, or to a base sequence sufficiently complementary to at least a portion of a **secoisolariciresinol dehydrogenase** DNA or RNA to enable hybridization therewith. Thus, systems and methods are provided for the recombinant expression of **secoisolariciresinol dehydrogenases** that may be used to facilitate the prodn., isolation and purifn. of significant quantities of recombinant **secoisolariciresinol dehydrogenase** for subsequent use, to obtain expression or enhanced expression of **secoisolariciresinol dehydrogenase** in plants in order to enhance, or otherwise alter, lignan biosynthesis, or may be otherwise employed for the regulation or expression of **secoisolariciresinol dehydrogenase**. Thus, 5 F. intermedia **secoisolariciresinol dehydrogenase** cDNAs were cloned and sequenced. One of these cDNAs was used in a Northern blot anal. An mRNA band of 1 Kb was found in Podophyllum peltatum, Linum flavum and Thuja plicata.

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 6 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
AN 1997:381550 BIOSIS
DN PREV199799680753
TI Purification of **secoisolariciresinol dehydrogenase**.
AU Davin, Laurence B.; Xia, Zhi-Qiang; Costa, Michael A.; Fujita, Masayuki; Lewis, Norman G.
CS Inst. Biol. Chem., Washington State Univ., Pullman, WA 99153 USA
SO Plant Physiology (Rockville), (1997) Vol. 114, No. 3 SUPPL., pp. 233. Meeting Info.: PLANT BIOLOGY '97: 1997 Annual Meetings of the American Society of Plant Physiologists and the Canadian Society of Plant Physiologists, Japanese Society of Plant Physiologists and the Australian Society of Plant Physiologists Vancouver, British Columbia, Canada August 2-6, 1997
ISSN: 0032-0889.
DT Conference; Abstract; Conference
LA English